

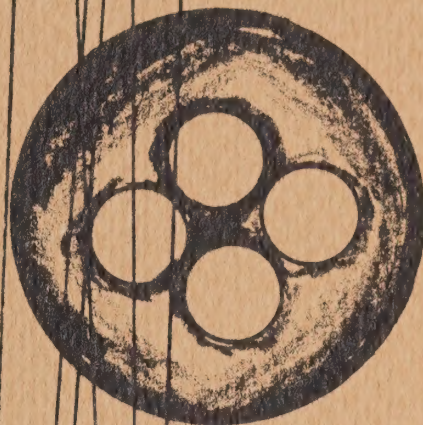
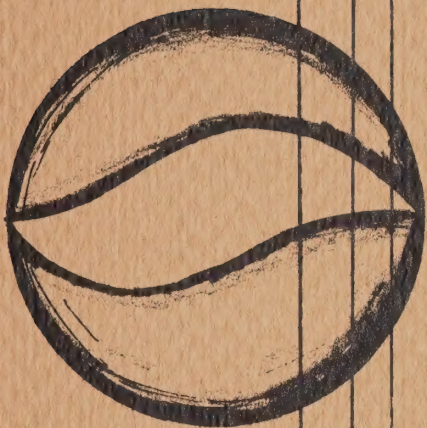
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NOISE

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ELEMENT



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IMPERIAL COUNTY

NOISE ELEMENT

Adopted

October 1, 1974

County planning Imperial co.
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NOISE ELEMENT

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" . . . and bringing as their accompaniments, the disturbing noises incident to increased traffic and business, . . . automobiles (and other major transportation elements), thus detracting from their safety, and depriving children of the privilege of quiet and open spaces for play, enjoyed by those in more favored localities, - until, finally, the residential character of the neighborhood and its desirability as a place of detached residences are utterly destroyed".

Justice George Sutherland for the majority, U.S. Supreme Court, Euclid v. Ambler 272 U.S. 303 (1926).

NOISE ELEMENT

IMPERIAL COUNTY GENERAL PLAN

INTRODUCTION

One ballad of the West alludes to a romantic quality of the region, that of being a place "where seldom is heard a discouraging word, and the skies are not cloudy all day."

The skies of the American west have become clouded, smokey, and smoggy. The list of localities having air pollution problems now includes portions of Imperial County.

But this is not the only change that has taken place. Sometimes a person cannot hear a discouraging word or any word at all, due to the excessive noise.

Interruption of speech, sleep, and telephone conversations are irritating inconveniences. Rising noise levels, which have accompanied the increase of mechanization in our society, have tended to lower the environmental quality of our surroundings.

Excessive noise levels are socially disruptive. The individual in society may suffer physical or psychological injury due to noise. The health, safety, and welfare of individual citizens is a legitimate area of governmental concern. Indeed, this area is one of the most basic and primary concerns of any government.

Concern over this problem and the individual's health and welfare, caused California's legislature to examine the unsafe aspects of noise pollution. It was the conclusion of these lawmakers that the problem required local government's attention. It was expressed by some that local government, closest to the people, should work out the strategies and solutions which would be appropriate for each unique situation.

It has been discovered by previous experience that solutions imposed from

above often have a negative net result in actual application. The appropriate circumstance for Sacramento legislation is when state-wide problems merit a centralized approach, or local governments refuse to take on responsibility delegated to them by home-rule conscious legislators. In this respect it is important that Imperial County exercise the mandate inherent in Section 65302(g) of the California Government Code.

LEGISLATIVE REQUIREMENTS

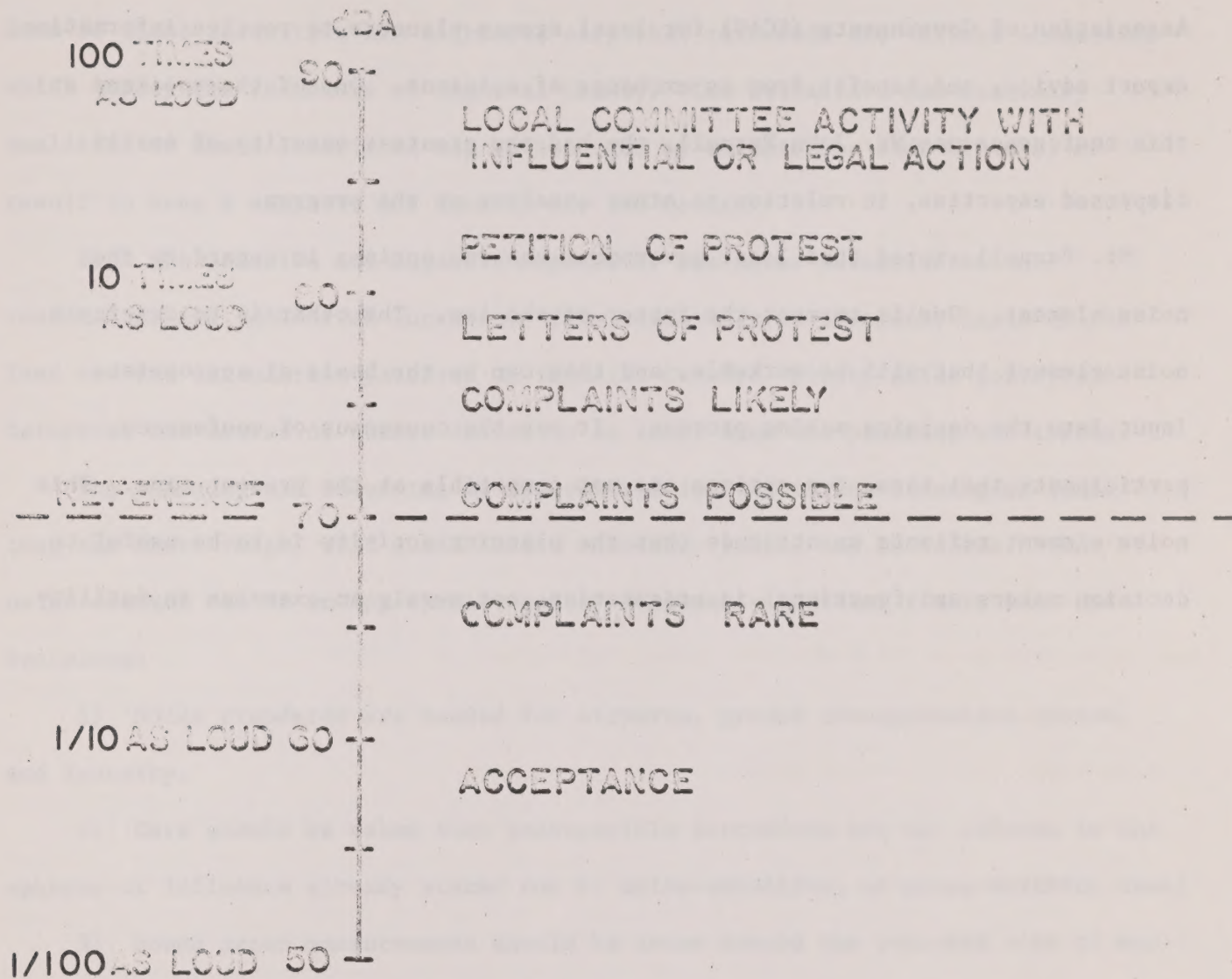
Legislation

The State law was amended in 1972 to require a Noise Element of all city and county general plans. This element is to show contour determinations from noises generated and emitted by, "all existing and proposed major transportation elements."

The activities contributing to Imperial County's aggregate noise environment, and thus considered in this noise element include:

- 1) County highways;
- 2) highways and freeways;
- 3) airports, and their client craft;
- 4) railroads;
- 5) water vehicles
- 6) off-highway vehicles; and
- 7) any noise-emitting industry that involves transportation in the manufacture, assembly and distribution of its products.

FIGURE 1



TREND OF PUBLIC REACTION TO PEAK NOISE NEAR RESIDENCES

Source: "Background Information for the Workshop on the Noise Element" (SCAG): p. 12.

Applicability

On June 5, 1974, there was a workshop in Buena Park dealing with the problems of noise element preparation. This workshop was set up by the Southern California Association of Governments (SCAG) for local agency planners to receive information, expert advice, and benefit from an exchange of opinions. One of the speakers at this conference was Mr. John Parnell, who had the greatest quantity of easily dispensed expertise, in relation to other speakers on the program.

Mr. Parnell stated that local government has two options in regard to the noise element. One is to meet the letter of the law. The other is to develop a noise element that will be workable, and that can be the basis of appropriate input into the decision making process. It was the consensus of conference participants that these two options are not compatible at the present time. This noise element reflects an attitude that the planning activity is to be useful to decision makers and functional in orientation, not merely an exercise in futility.

Why have a Noise Element?

The Noise Element considers the location of noise-generating activities. Some of these activities are highways, airports, railroads and various industries which employ the residents of Imperial County. The attractive and necessary qualities of these activities may be balanced by undesirable side effects, or result in even a negative net benefit for the County.

Both the positive and negative aspects of the noise situation affect residential and industrial location. This results in an important input to the land use and circulation patterns of Imperial County. County noise policy can determine the course of future decisions in local land use planning and zoning.

The planning and recording of appropriate implementation strategies (both long and short range) will guide future elements, plans, and decisions. The noise element can be an appropriate policy document supporting future land use decisions:

- 1) Noise standards are needed for airports, ground transportation system, and industry.
- 2) Care should be taken that incompatible intrusions are not allowed in the spheres of influence already staked out by noise-sensitive, or noise-emitting uses;
- 3) Sound meter measurements should be taken around the proposed site of any project that is excessively noise-emitting or noise-sensitive.

Limitations

Sound Measurement

The noise contours of airport ground facilities are insignificant when compared to the impact of take-offs, landings, and approach patterns.

Thus, including the noise contours of airport ground operations is superfluous

when considered in conjunction with the noise impact of aerial operations.

County noise policy will involve the segregation of incompatible uses and will suggest constraint zoning to allow an attractive and balanced environment in Imperial County. This segregation will be based on the greater noise generation of airborne operations. The noise contours of ground operations are part of a minimum set of standards: "These include but are not limited to the following: ... (3) ground facilities associated with all airports operating under a permit..."¹

Thus, any set of contours, contour determining formulae, and/or noise standards exceeding those listed, would be consistent with the goal of a pleasing environment, as articulated by the 1972 Legislature.

Relationship to Other Elements

The Noise Element is an integral part of the Imperial County General Plan. It both supplements and complements the Land Use Element. Where conflicts arise, the more restrictive element will apply, regardless of origin.

The noise element has a direct relationship with the land use, circulation/transportation, and housing elements.

The situation in this county creates a unique relationship with the Open Space Element. In most localities the concern is over the noise emissions intruding into recreational and noise-sensitive parks. In Imperial County the situation is somewhat reversed, since motorboats, dune buggies, and motorcycles have caused the county parks to be noise-emitting uses.

Relationship to Environmental Impact Reports

The effect which noise pollution has upon the human environment is two-fold.

The public's health, safety and welfare may be harmed or endangered by excessive noise levels which can be physically and psychologically damaging.

¹ Section 65302(g), Government Code

The community's resource base may be diminished by unacceptable noise conditions. Excessive noise lowers property values and worker productivity. Presently the aggregate costs of noise damage are being borne on a community-wide basis by those individuals and uses surrounding each offending source.

The situation has reached a point where it is feasible and practical to segregate noise sensitive and noise-generating uses. This would allow the offending and/or hyper-sensitive uses to pay the costs arising from their inherent nature. For the community as a whole this would be the most cost efficient system.

The Use of Identified Environmental Noise Levels

Noise levels are identified irrespective of the nature of any individual noise source. One of the primary purposes of identifying environmental noise levels is to provide a basis by which noise source emission regulations, human exposure standards, land use planning, zoning, and building codes may be assessed, as to the degree with which they protect the public health and welfare with respect to noise. Such regulatory action must consider technical feasibility and economic reasonableness, the scale of time over which results can be expected, and the specific problems of enforcement. In the process of balancing these conflicting elements, the public health and welfare consequence of any specific decision can be determined by comparing the resultant noise environment against the environmental noise levels identified in the implementation and regulation manual which will follow in the future.

Revision

The Noise Element is part of the County General Plan. Each element of the General Plan can be amended by the Board of Supervisors three times a year upon

the advice and request of the Planning Commission and/or the general public.

AREAS OF STATE AND NATIONWIDE INTEREST

Agriculture

The agricultural production of Imperial County helps to feed Los Angeles and southern California throughout the year. The availability of vitamins and nutrients in fresh produce exceeds that of canned food. Winter production of vegetables (in Imperial County) is very beneficial to the health of America's children, particularly those in colder climates. The winter-time health of Americans of all ages is dependent upon sun-belt agriculture. Thus the agricultural activity of Imperial County is of state and inter-state importance.

El Centro Naval Air Station

The El Centro Naval Air Station is a multi-use, multi-service operation. The National Parachute Test Range and aircraft carrier practice landings are both national defense functions.

Some of these areas include the Salton Sea Test Site, Recovery Parachute Test Range, Desert Annex of the El Centro Naval Air Facility, the Chocolate Mountain Aerial Gunnery Range, Target 68, Target 95, and Target 107A.

These military uses can cause noise generated on a site to extrude beyond the range's perimeters. This is most likely to occur in conjunction with the activities at Targets 95 and 68 (about 12 and 15 miles east of Brawley, respectively). The vastness of the Chocolate Mountains Aerial Gunnery Range causes the noise impact to be minimal.

Again, the devence mission of these sites give a nationwide significance, and federal pre-emption to the activities centered there.

Water Areas

The Salton Sea and the Colorado River are both recreational areas of state-wide importance. Both of these sites are regularly visited by thousands of motorboat recreationists. This level of usage by unmuffled motorboats causes both sites to be excessive noise generators. This occurs to the point of impacting on-shore recreational and non-recreational properties.

The Yuha Desert

The Yuha Desert is an area of multi-county usage, as determined by the origin of dune-buggy/four wheel drive enthusiasts who travel there on weekends. Again, on-site noise generation minimizes any intrusive noise coming from off-site uses.

The Imperial Sand Hills

The Imperial Sand Hills are of multi-state significance. They are used by dune-buggy buffs from all over the southwestern United States, with the heaviest use by Southern Californians. On-site emissions again exceed intrusions originating off-site.

GOALS AND OBJECTIVES

ISSUES

(1) It is the responsibility of local government to prevent its citizens from being harmed by side effects of an approved project including excessive noise levels.

(2) Private damage and nuisance actions sometimes accompany excessive noise levels.² Abatement of nuisances has long been a remedy offered by the common law. American society has resolved that community preventive standards are more equitable and effective than individual suits by the individuals adversely affected by nuisance activities.

(3) The excessive emission of noise diminishes the attractiveness of residential neighborhoods.

(4) The government's right to regulate arises from the legislated expression of elected representatives.

(5) Since the Colorado River is in the common jurisdiction of Imperial County, California, and Arizona, it would be wise to have consistent and compatible noise standards.

(6) Excessive noise raises tensions, stress, and interferes with relaxation. The present level of noise is not conducive to rest, recreation, and relaxation.

GOALS

(1) It shall be the goal of Imperial County to insure the health, safety, and welfare of its population, so that they may be less hindered in the pursuit of happiness.

(2) It shall be the goal of Imperial County to establish policies, and suggest standards reflecting local needs and conditions.

² The City of Los Angeles is presently being sued for a total of over \$4 Billion dollars in a multitude of suits arising from the disturbing noise and vibration that originates at the International Airport.

(3) It shall be the goal of Imperial County to insure a safe and pleasant acoustical environment in all residential neighborhoods.

(4) It shall be the goal of Imperial County to operate under the normally accepted standards of public health, safety, and welfare legislation.

(5) It shall be the goal of Imperial County to have noise standards compatible with neighboring jurisdictions.

(6) It shall be the goal of Imperial County that residents, weekenders, and tourists will be able to enjoy water-oriented recreation facilities with a minimum of noise interference.

OBJECTIVES

(1) To minimize the intrusion of excessive noise into any sensitive environment.

(2) To protect industrial spheres from noise sensitive uses.

(3) To segregate uses which are incompatible due to noise factors.

(4) To provide an acoustical environment allowing unhampered play by any child in his backyard.

(5) To impose the minimum amount of regulation needed to ensure a safe and healthy environment conducive to human welfare.

(6) To encourage the passage of a bill regarding motorboat noise.

(7) To bring to the attention of Riverside County officials the mutual advantages of uniform noise regulations on the Salton Sea and the Colorado River.

(8) Boaters should comply with the uniform regulations applying to the waters over which Imperial County has full or partial jurisdiction.

(9) Noise regulations will not apply to races and regattas sponsored or sanctioned by the U. S. Coast Guard, or the Imperial County Parks and Recreation Department.

EFFECTIVE NOISE AND LAND USE COMPATIBILITIES

GENERAL

Sound-Nature

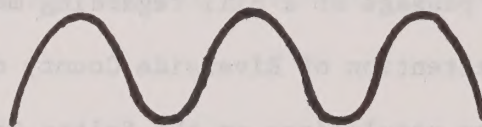
What is Noise?

Sound is the vibration of particles in either a gaseous, lequid, or solid state. The chief sources of sound is the vibration of solid objects. When a solid object moves back and forth, the action is called vibration. This vibration displaces and moves the air particles near the object and sets them vibrating. This produces a variation in normal atmospheric pressure. When variations in atmospheric pressure variation arrive at the ear drums, the latter are set to vibrating. The ear drum vibrations are deciphered into discernable sounds: speech, music, and other message oriented sounds; background "hums" such as air conditioning and other "noise".

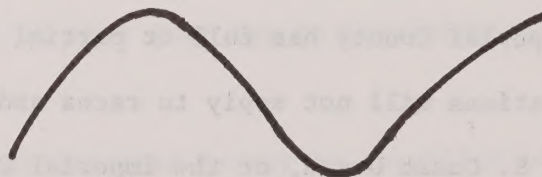
Noise in this definition is non-communicative frictional sound occuring as a peripheral product of mechanical activities seemingly inherent in a technological society.

Sound - Basic Facts

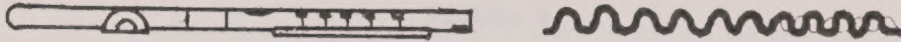
Sound is a vibration (energy wave) transmitted by molecules of air.



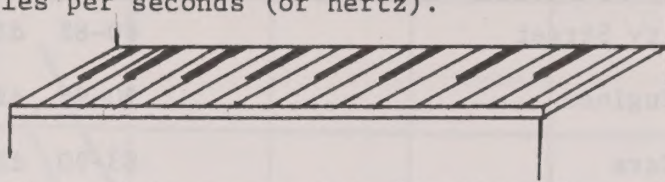
Low Pitch sounds are made by slow vibrations with long wave lengths.



High pitch sounds are made by fast vibrations with short wave lengths.



The pitch of a note is called "frequency" and is measured by the rate of vibration in cycles per seconds (or hertz).



The volume of sound is measured in "decibels," a unit proportional to the logarithm of the sound power (or sound pressure p). The reference sound pressure p_0 (the smallest sound a human can hear), is usually 0.0002 dynes/sq. cm. The decibel is a very convenient unit because of the tremendous sensitivity of the ear. If sound were measured directly in pressure units, we would have to talk about numbers from 0.0002 to 2000 dynes/sq. cm. (10 million times arithmetically). This would be much less convenient than working with decibels which range from 0 to 140.

$$\text{Sound Pressure Level} = 20 \log_{10} \frac{P}{P_0} \text{ in decibels.}$$

Acoustical designers and technical writers who deal with sound and noise have established three "weighting characteristics". The weights are called "A", "B", and "C". The differential quality among these weighting systems is the manner in which they deal with sounds of very low frequency. The A network screens them out in an efficient manner. The B network does this in a moderate manner. The C sound system deals with very low sounds in a negligible manner.

Measurements on the C system may tend to be higher than the A system measures if there is a moderate amount of low frequency noise.

The characteristic quality of each system has merits in various situations. In measuring the audible, human impact of sound, the A system is much preferred. The A system is also preferable in measuring auto and truck noise.

FIGURE 2

Noise Levels Observed at about 50 feet from Buses and Trains

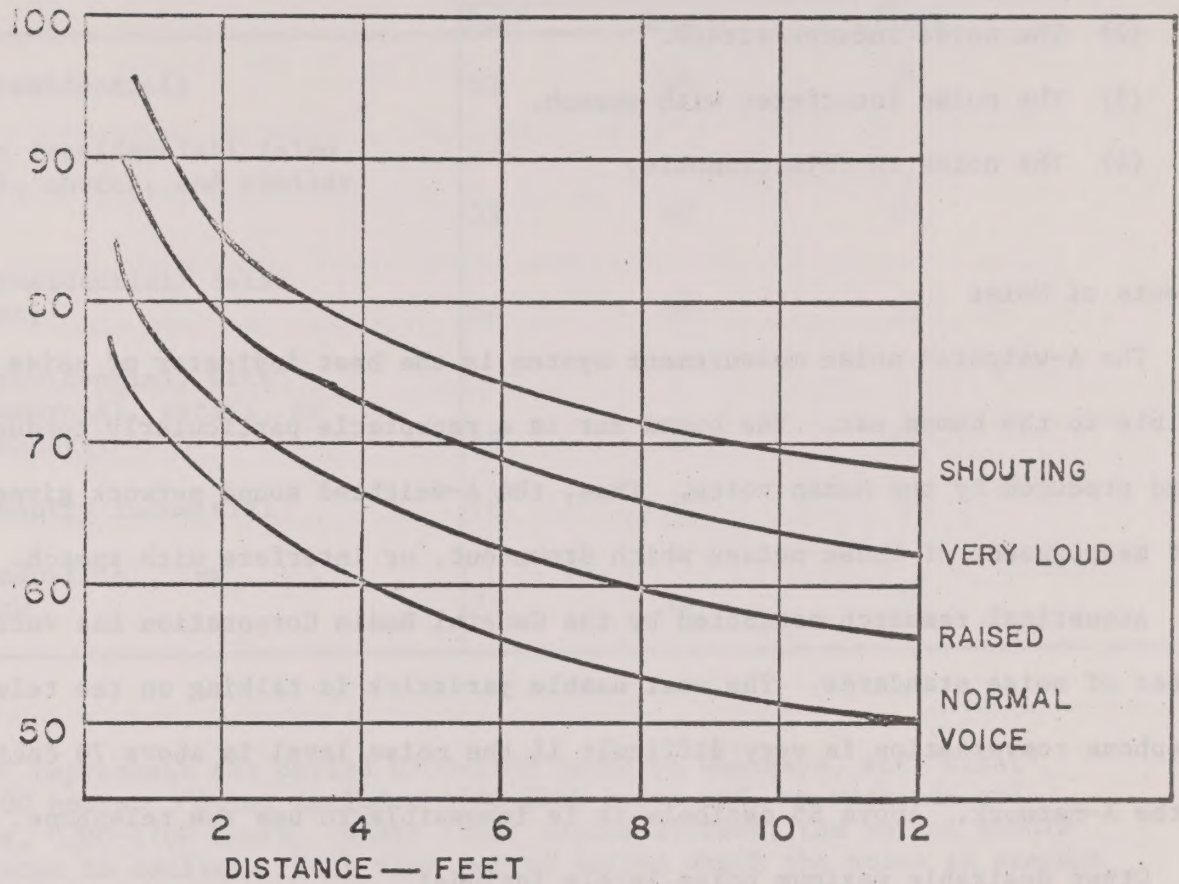
Motor Buses on City Street	80-88 dBA
Passenger Train Engines	90-96 dBA
Passenger Train Cars	83-90 dBA
Freight Train Engines	92-104 dBA
Freight Train Cars	82-96 dBA

FIGURE 3

Typical Wayside Noise Levels for Single Vehicles
at 50 feet from the Lane of Travel

Speed	Automobiles	Gasoline Trucks	Diesel Trucks
55-65 mph	75-82 dBA	---	---
55	---	78-88 dBA	84-92 dBA
25-35	60-70	70-80	80-88

FIGURE 4



Curves showing how noise interferes with spoken or shouted conversation.

Reasons for the reduction or elimination of noise generally fall into one or more of the following categories:

- (1) The noise is a hazard to hearing.
- (2) The noise induces stress.
- (3) The noise interferes with speech.
- (4) The noise is objectionable.

Effects of Noise

The A-weighted noise measurement system is the best indicator of noise levels audible to the human ear. The human ear is a receptacle particularly conducive to sensing sound produced by the human voice. Thus, the A-weighted sound network gives the best measurement of those noises which drown out, or interfere with speech.

Acoustical research conducted by the General Radio Corporation has verified a number of noise standards. The most usable yardstick is talking on the telephone. Telephone conversation is very difficult if the noise level is above 70 decibels in the A-network. Above 85 decibels it is impossible to use the telephone.

Other desirable maximum noise levels include:

<u>Location - Use</u>	<u>dB(A)</u>
School rooms	40
Small Conference rooms	40
Private offices	40-50
Drafting Rooms	55-65
Secretarial offices	60-65

FIGURE 5

GUIDELINES FOR COMMUNITY NOISE LEVELS

Area	Sound Level (dBA)		
	Day*	Night	Other
Rural (residential)	50	40	45
Suburban (residential) (also hospital, church, and similar zones)	55	45	50
Urban (residential) (also apartment)	60	50	55
Urban (residential) with some commercial, retail, or light industry	65	55	60
Predominantly industrial	70	60	65
Heavy Industrial, few dwellings	75	65	70

* "Day" represents the period 0700-1700 hours on weekdays, and "night", 2200-0700 hours. "Other" includes 1700-2200 hours and, on weekends and holidays, 0700-1700 hours. Where local custom differs, the period should be adjusted to confirm. Each time period during which the noise is present should be considered.

Day - is 7 a.m. - 6 p.m.
 Other - is 6 p.m. - 10 p.m.
 Night - is 10 p.m. - 7 a.m.

A person's hearing acuity begins to decline after the age of 20. This process is normally a gradual decrease, which is most apparent as a lack of perception of higher frequencies. This normal, unaccelerated process of hearing loss is called "Presbycusis" (Meaning "lack of hearing by the elderly")

Hearing loss is not solely caused by presbycusis. Exposure to excessive noise, accidents, disease and other sickness, all may contribute to the loss of hearing in an individual. The varying physical characteristics of individuals causes hearing losses which vary both as to the level of noise one has been exposed to and the length of time such exposure has taken place. Individual physical, mental, and emotional reactions can contrast greatly due to the multiple variable involved.

Noise of 70 dB(A) can cause dilation of pupils of the eye, as well as constriction of the body's blood vessels (which in turn causes a temporary increase in blood pressure).

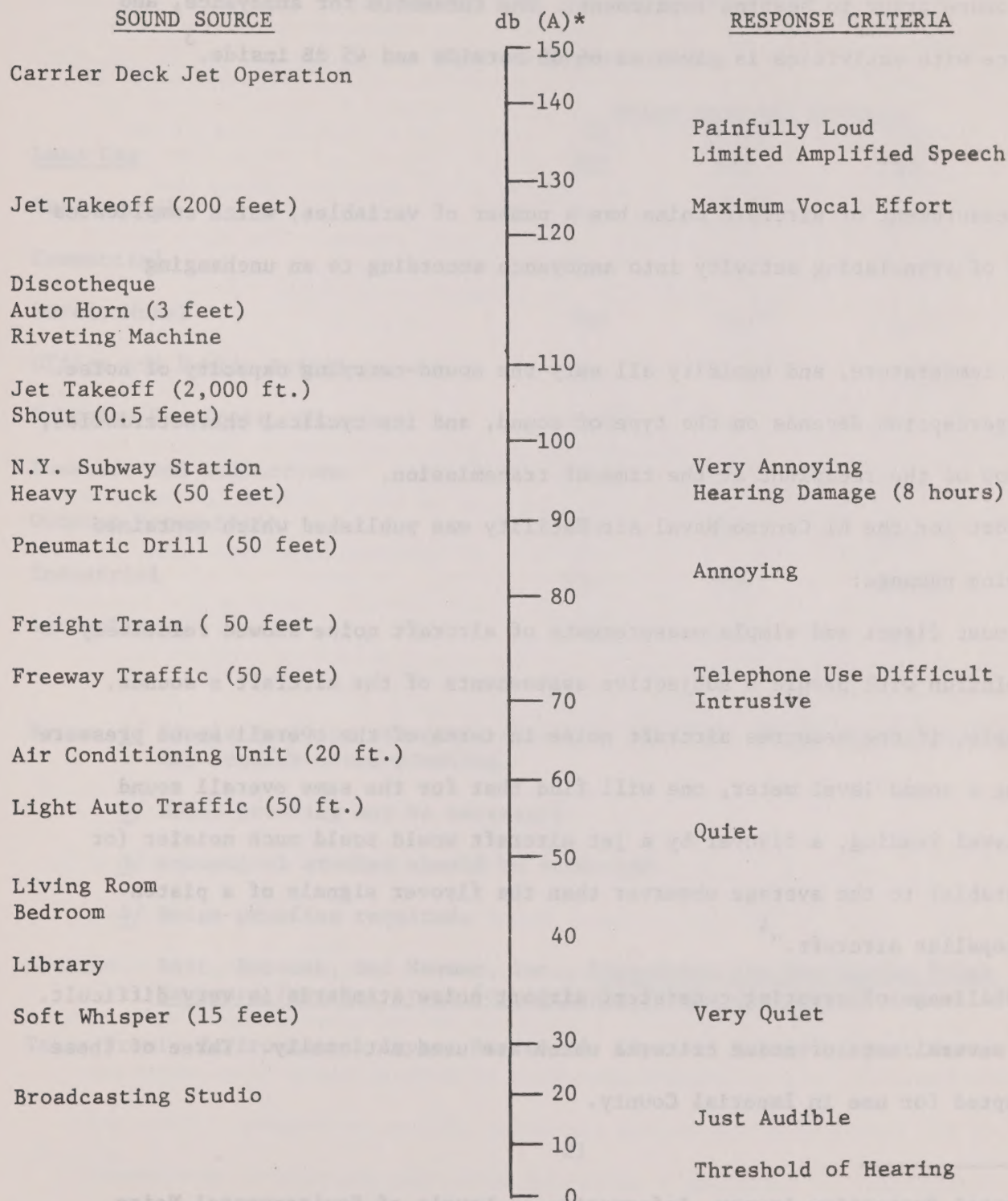
Loss of hearing is the only well-documented permanent health damage to humans that is directly caused by noise exposure, although prolonged exposure to high levels of noise has cause impotence in rats. Many human bodily ailments have been attributed to noise exposure, but are actually stress-related. High noise levels appear to be an integral part of the urban "rat-race".

Compatibility

It is in the interests of the community to minimize the negative impact which noise has upon its component members. The segregation of noise-generating and noise sensitive uses, such as a factory and a home, is a legitimate function of

FIGURE 6

TYPICAL "A" WEIGHTED SOUND
LEVELS AND HUMAN RESPONSE



*Typical A - Weighted sound levels taken with a sound level meter and expressed as decibels on the scale. The "A" scale approximates the frequency response of the human ear.

Source: Environmental Quality - The First Annual Report of the Council on Environmental Quality. Council on Environmental Quality, Transmitted to Congress, August 1970.

government.

The Environmental Protection Agency recommends 70 decibels (dB) as the maximum daily exposure prior to hearing impairment. The threshold for annoyance, and interference with activities is given as 66 dB outside and 45 dB inside.³

AIRPORTS

The measurement of aircraft noise has a number of variables, which complicates the matter of translating activity into annoyance according to an unchanging formula.

Wind, temperature, and humidity all vary the sound-carrying capacity of noise. But human perception depends on the type of sound, and its cyclical characteristics, and the mood of the recipient at the time of transmission.

A report for the El Centro Naval Air Facility was published which contained the following passage:

"... most direct and simple measurements of aircraft noise showed relatively poor correlation with people's subjective assessments of the aircraft's sounds. As an example, if one measures aircraft noise in terms of the overall sound pressure level using a sound level meter, one will find that for the same overall sound pressure level reading, a flyover by a jet aircraft would sound much noisier (or less acceptable) to the average observer than the flyover signals of a piston-powered propeller aircraft."⁴

The challenge of creating consistent airport noise standards is very difficult. There are several sets of noise criteria which are used nationally. Three of these can be adapted for use in Imperial County.

³Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety; Washington, D.C.: U.S. Government Printing Office, 1974, p.6.

⁴Bolt, Beranek, and Newman, Inc., "Noise from Aircraft Operations, Naval Air Facility, El Centro, California," (July) 1970, pp. 4-5.

FIGURE 7

NOISE EXPOSURE FORECAST (NEF) AND SUGGESTED LAND USE COMPATIBILITY

Imperial County Airport

Land Use	Noise Exposure Forecast		
	30 NEF	30-40 NEF	40 NEF
Residential	Yes	Yes ^{1/}	No
Commercial	Yes	Yes	Yes ^{2/}
Hotel, Motel	Yes	Yes ^{2/}	No ^{4/}
Office and Public Buildings	Yes	Yes ^{2/}	No ^{4/}
Schools, Hospitals, Churches	Yes ^{2/}	No	No
Theaters and Auditoriums	Yes ^{3/}	No	No
Outdoor Recreation	Yes	Yes	Yes
Industrial	Yes	Yes	Yes ^{2/}
Agricultural	Yes	Yes	Yes

Notes: ^{1/} Single dwelling structure should be avoided. Multi-family dwellings may require sound-proofing.

^{2/} Noise proofing may be necessary.

^{3/} Acoustical studies should be conducted.

^{4/} Noise proofing required.

Source: Bolt, Beranek, and Newman, Inc., Procedures for Developing Noise Exposure Forecast Areas for Aircraft Flight Operations, August 1967.

Taken From: Environmental Impact Statement, Imperial County Airport Master Plan.

Composite Noise Rating

The first standard is the Composite Noise Rating (CNR). This rating is the system used by the U.S. Navy for determining the noise generated by their El Centro Facility. The system has been in wide usage since 1963. It is a system based on the number of take-offs, landings and runups occurring in a typical time frame.

The CNR is a rough equivalent to the maximum sound emission, since the perceived noise level is 9 - 12 dB above the A-weighted system. The added margin inherent in the system includes almost all operational conditions.

Noise Exposure Forecast

The Noise Exposure Forecast (NEF) system was developed by Bolt, Beranek and Newman, Inc. for the Federal Aviation Administration in 1970. The Noise Exposure Forecast System is based on the Effective Number of Operations per day. The formula determines where the "NEF 40", "NEF 30", and "NEF 20" contours are located. Areas located above, below or between these guide points should be subject to certain limitations (or none at all) as is appropriate.

HUD

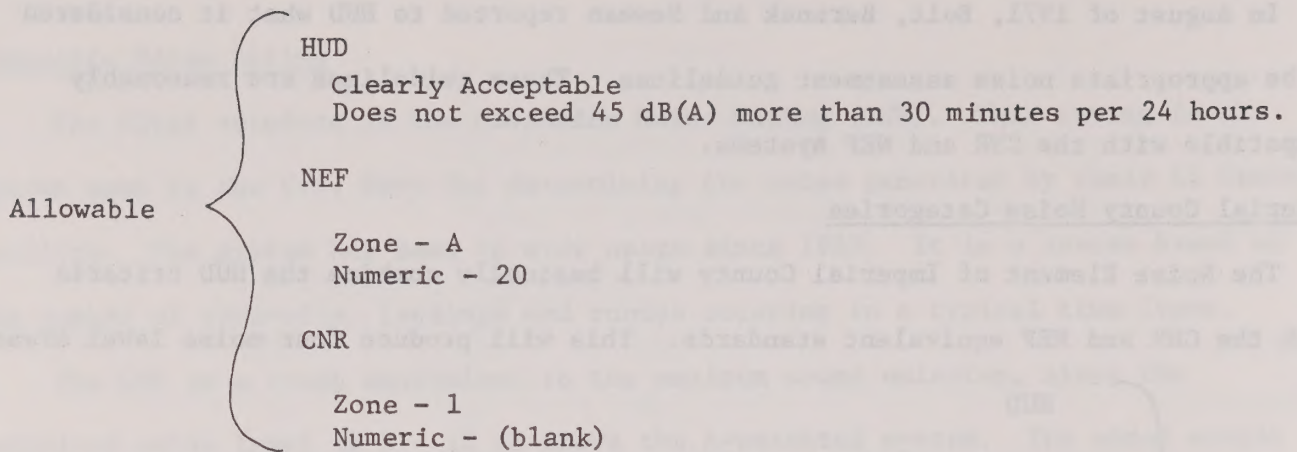
The U.S. Department of Housing and Urban Development (HUD) has set criteria to guide the investment of federal monies. These monies are usually the mortgage guarantees of the Federal Housing Administration (FHA). With the mortgage guarantees, the federal government obtains title to a house if the mortgage is defaulted. For purely economical reasons the federal government is wary of where these homes are located. If the location is unsuitable due to an adverse environment, there will be little possibility of reselling a defaulted home, and the federal government will lose several thousand dollars per building.

In August of 1971, Bolt, Beranek and Newman reported to HUD what it considered to be appropriate noise assessment guidelines. These guidelines are reasonably compatible with the CNR and NEF systems.

Imperial County Noise Categories

The Noise Element of Imperial County will basically combine the HUD criteria with the CNR and NEF equivalent standards. This will produce four noise level areas:

Critical	HUD	Clearly Unacceptable - Exceeds 80 dB(A) for 60 minutes per 24 hr. time span, or exceeds 75 dB(A) for 8 hrs. per 24 hr. time span.
	NEF	Zone - C Numeric - greater than NEF 40
	CNR	Zone - 3 Numeric - greater than CNR 115
Concern	HUD	Normally Unacceptable - Exceeds 65 dB(A) for 8 hrs. per 24 hr. time span or loud repetitive sounds on site.
	NEF	Zone - C Numeric - NEF 30 $\leq$ NEF 40
	CNR	Zone - 2 Numeric - CNR 100 - CNR 115
Caution	HUD	Normally Acceptable Exceeds 65 dB(A) for less than 8 hours per 24 hours.
	NEF	Zone - Upper A Numeric - NEF 20 - NEF 30
	CNR	Zone - Upper 1 Numeric - CNR 100 + 1/2 the distance (found between CNR 100 and CNR 115) to be extended outward.



The logic for these breakdowns can be seen from the HUD nomenclature (in reference to federal investments). In addition, the state statute mandating a noise element as a part of each county's general plan requires that the 45 decibel contour shall be shown in reference to hospitals, rest homes, or outdoor recreation areas. Reasonable satisfaction of this requirement would be the contour between the "area of caution" and that of "allowable" use, since the 45 dB(A) level is not exceeded at that point for more than a half hour per day.

The Imperial County Noise Categories seem to provide standard classes, based upon acoustical standards used and developed by a leading consulting firm for various federal agencies. Their integration into this noise element will help to produce appropriate decisions on the land use/noise interface.

Anyone who has noise-generation or noise-sensitivity data for a proposed land use in one of the three acoustical standards, may "plug in" their data and find out the relative suitability of the proposed use at the contemplated site.

This system will allow consistency and usability for land users, owners, and developers, as well as the general public, law officials, planning professionals, or the courts.

FIGURE 8

AIRPORT	YEARLY ESTIMATE	WEEKLY ESTIMATE	DAILY FLIGHT ESTIMATE			ANNUAL EFFECTIVE NUMBER OF OPERATIONS		
			TOTAL	NIGHT	DAY	NIGHT X17	DAY	TOTAL (sum of DAY and NIGHT)
BRAWLEY MUNICIPAL	12,000	250	50	10	40	40,800	9,600	50,400
CALEXICO INTERNATIONAL	30,000	577	83	16	67	98,311	24,455	122,766
CALIPATRIA MUNICIPAL	22,000	423	61	24	37	147,147	13,345	160,492
O'CONNELL BROTHERS (used by 4 crop dusting firms, peak period from July to October)	6,000	120	24	24*	—	102,000	—	102,000

drawn by F.P. Moh

* 5 day week

Source: Imperial County Airport Master Plan, pages 23 and 24 and field check interviews.

STATE HIGHWAYS AND FREEWAYS

The state highways and freeways are important to the economy of Imperial County as movers of goods and people.

The noise materials (maps, charts, data and explanatory text) furnished to Imperial County by the California Department of Transportation (Caltrans) are considered an integral portion of this element.⁵ The methodology used by Caltrans was Test Method No. California 701-A.

Impact on Ambient Noise Level

The discussion of vehicle noise for a proposed project should include a background description of the mechanisms involved in vehicle noise generation and propagation.

To evaluate the effects of motor vehicle noise, it is important to first determine what generates the noise within the vehicle. The noise resulting from an individual vehicle is dependent upon three factors:

- 1) the location and design of the pavement upon which the vehicle operates;
- 2) the way in which the vehicle is operated; and
- 3) the vehicle's design characteristics.

Any one of the vehicle's components (tires, exhaust, fan, frame, or engine) may become the dominant source of noise. When one sub-system is quieted, another one may come to the surface and be as irritating. For example, if a new muffler makes the exhaust noise half as loud, the attempt at noise control may be nearly useless since the fan noise may then predominate, making the overall noise reduction nearly insignificant.

⁵ Boyle, Ed, Procedural Outline: Noise Level Prediction Methodology to Supplement Sound Contour Maps for Riverside and Imperial Counties within District 11, San Diego: Caltrans Multimodal Transportation Planning Section, (April) 1974.

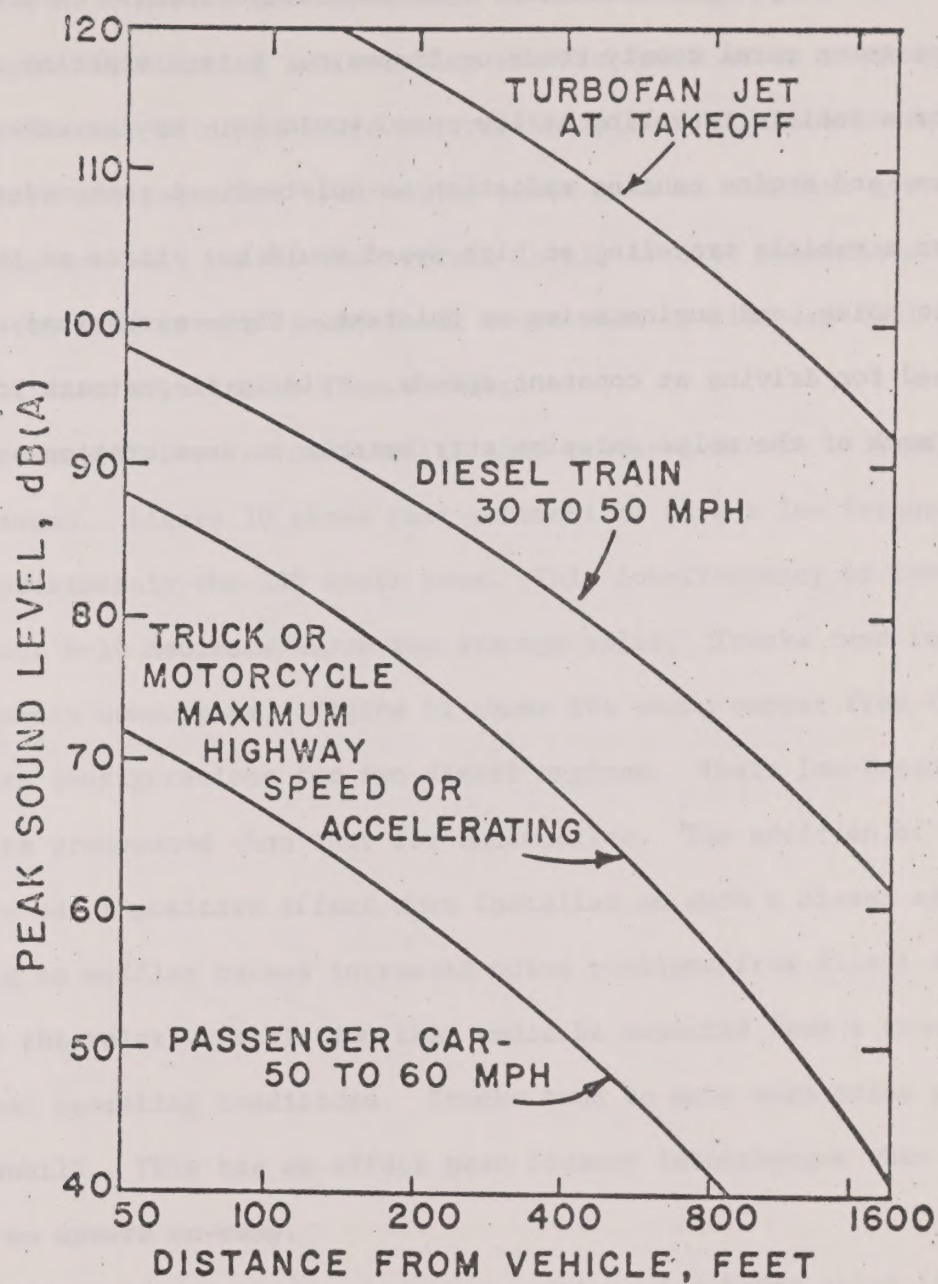


Figure 9 Typical levels of outdoor noise produced by transportation vehicles.

Many vehicular noise sources are speed-dependent and the dominant source may vary with the speed of operation. The noisiest mechanism on local streets will not be so on rural county roads or freeways. A rank ordering of noise sources for a vehicle traveling at low speed would be: engine exhaust as noisiest, cooling fan, and engine causing radiation as quietest. A rank ordering of noise sources for a vehicle traveling at high speed would be: tires as noisiest, aerodynamic noise, and engine noise as quietest. These mechanisms are fairly well defined for driving at constant speeds. This is in contrast to city driving, which has much of the noise emission attributable to acceleration and deceleration.

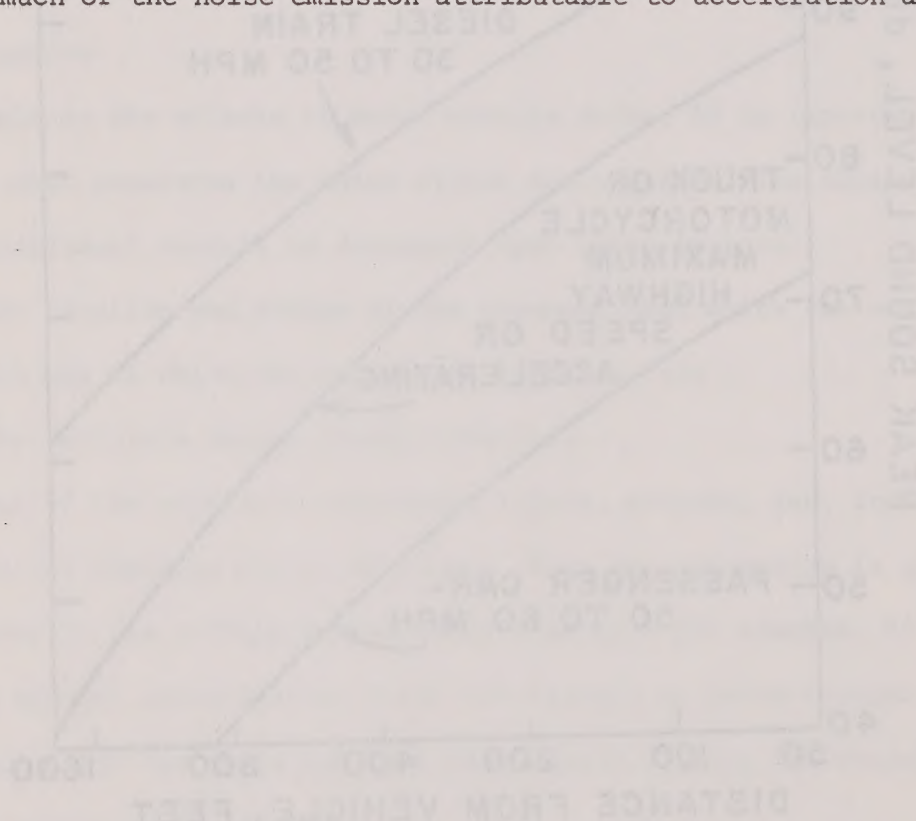


Figure 2
Typical levels of outdoor noise
produced by transportation vehicles

When speeds are under 35 miles per hour, noise emissions strongly depend on engine speed. Above 35 m.p.h. the dependence is less strong. It would be consistent to expect in starting and stopping traffic (such as on townsite streets) that the primary sources of noise could be attributable to engine exhaust and to other sources which are dependent upon engine speed such as the fan, gear box, etc.

Truck traffic not only boosts the overall level, it also introduces a greater variation about the mean level; sound level would seem to rise and fall more in a short period of time with trucks than without.

Another important factor to consider is that trucks generate a larger amount of low-pitched sound. Figure 10 shows that automobiles have a low frequency component in approximately the 100 hertz zone. This low-frequency or low-pitch component is about 8-10 decibels above the average value. Trucks tend to have larger low-frequency components. Figure 11 shows the sound output from three different exhaust configurations for two diesel engines. Their low-frequency peak is much more pronounced than that for automobiles. The addition of special muffling devices has a positive effect when installed on such a diesel engine. Of course, using no muffler causes increased noise problems from diesel engines. Figure 12 shows the relative variation that would be expected from a truck under several different operating conditions. Trucks tend to make more noise going uphill than downhill. This has an effect near freeway interchanges when a truck accelerates on an upward on-ramp.

Trucks are 10 to 20 dBA louder than cars, with trains being about 10 decibels louder than the trucks. Above all of these is the level of jet takeoffs. Even at relatively large distances, the different sources still produce significantly different levels of sound.

The noise emissions to be expected from an interstate freeway in the 65-75 decibel range. The level of noise emitted by other transportation modes varies with the shape and type of facility used.

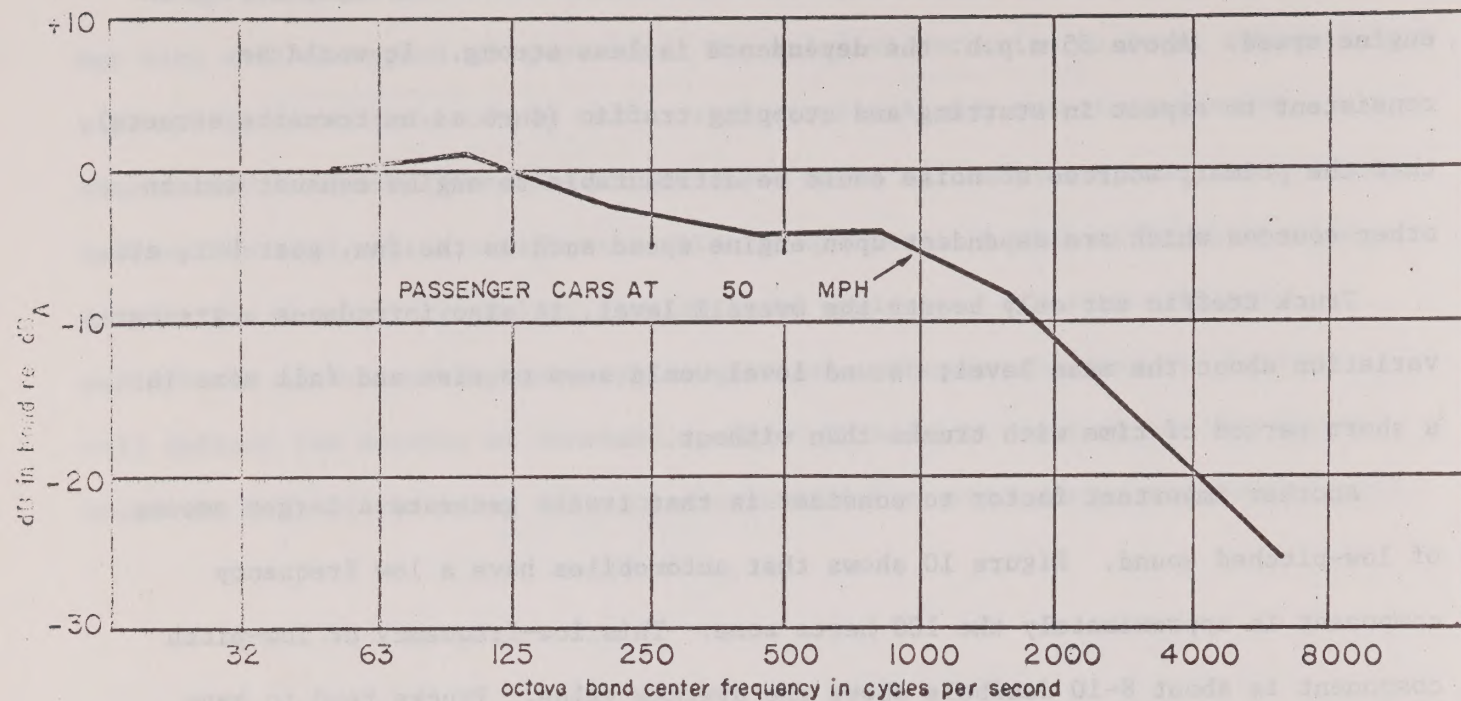


Figure 10 Generalized relative noise spectrum and dBA estimation equation for passenger cars at 50 mph.

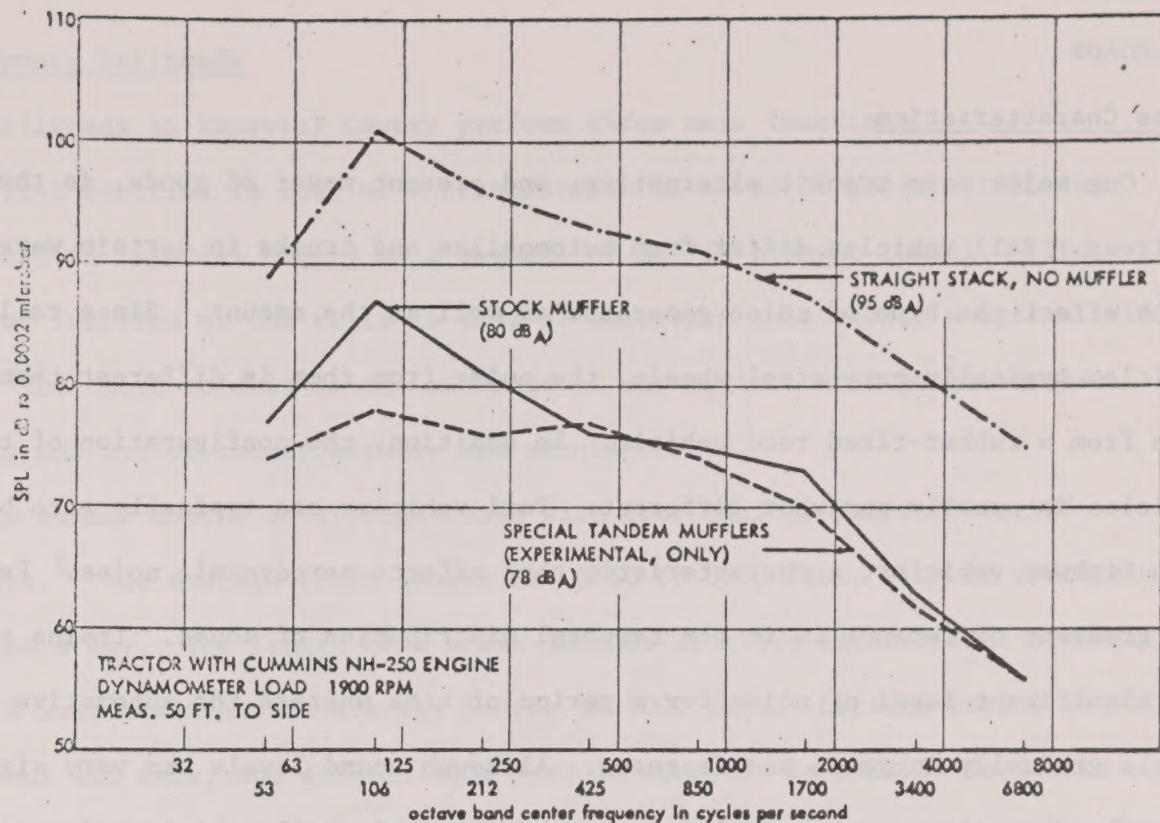


Figure 11 Illustration of the effects of three exhaust configurations on the noise spectrum measured 50 ft from a diesel truck.

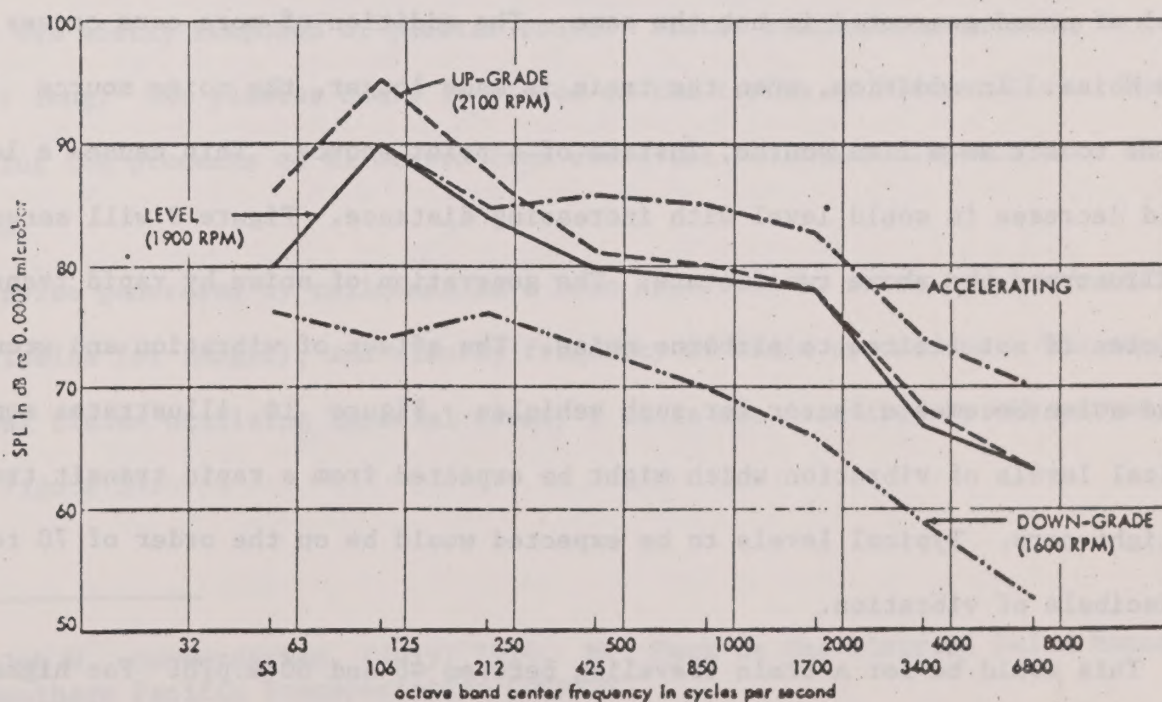


Figure 12 Noise spectra at 50 ft from a loaded diesel truck for up-grade, level, down-grade, and acceleration conditions.

RAILROADS

Noise Characteristics

One major mass transit alternative, and present mover of goods, is the railroad. Rail vehicles differ from automobiles and trucks in certain ways which affect the type of noise generated as well as the amount. Since rail vehicles typically have steel wheels, the noise from them is different than than from a rubber-tired road vehicle. In addition, the configuration of the vehicles is usually somewhat different. Tail vehicles are typically more boxy than highway vehicles, a characteristic that affects aerodynamic noise. Perhaps the greatest difference is in the temporal distribution of sound. Trains raise the significant level of noise for a period of time whereas the automotive levels gradually increase and decrease. Although sound levels can vary significantly depending upon several factors, but a single rail vehicle under normal operating conditions produces between 75 and 85 decibels on the "A" scale.

If such a single transit vehicle is included in a train of vehicles, the level of sound generated is not the same. The addition of more cars causes more noise. In addition, when the train is made longer, the noise source begins to act as a line source, instead of a point source. This causes a less rapid decrease in sound level with increasing distance. Figure 9 will serve to illustrate the above two factors. The generation of noise by rapid transit vehicles is not limited to airborne noise. The effect of vibration and ground-borne noise becomes a factor for such vehicles. Figure 10 illustrates some typical levels of vibration which might be expected from a rapid transit train of light cars. Typical levels to be expected would be on the order of 70 to 80 decibels of vibration.

This would be for a train traveling between 40 and 60 m.p.h. For higher speeds, higher levels should be expected.

Imperial County Railroads

The railroads in Imperial County perform three main functions.

The first function is that of a trancontinental mover of goods, utilizing rails located in Imperial County as a segment of an "in-transit tunnel." The second major function of the rails is that of exporting this county's agricultural products. The third role is in the exchange of non-agricultural goods between this county and out-of-county markets and manufacturers.

In the summer months an average train with four engines pulls 75 to 100 freight cars.⁶ The average train length was 3750 to 5000 feet, with an average of eight trains a day. The length of a train depends upon the agriculutral commodity carried. A beet train has an average length of 5000 feet. Lettuce trains usually contain about 130 cars, and stretch 6500 feet in length. Perishable loads are 120-150 cars in length (6000-7500 feet) with one extra load a day in and out of El Centro.

The longest train in the summer of 1974 was 8491 feet long (154 freight cars). This load was mostly composed of plaster board. Plater board trains usually are a mile and a half long. The plaster board is placed on the trains at Plaster City. The trains bring the products to El Centro from where the railroads dispatch many of the trains.

The noise generated by railroads have been described by noise level per train (with variables for length), and also by frequency of train operations. The sound of the long trains utilizing Imperial County's rails are described by the curved lines of Figure 13.

⁶Peck, Ralph M., Conversation, (July) 1974. Mr. Peck is the District Sales Manager of the Southern Pacific Transportation Company.

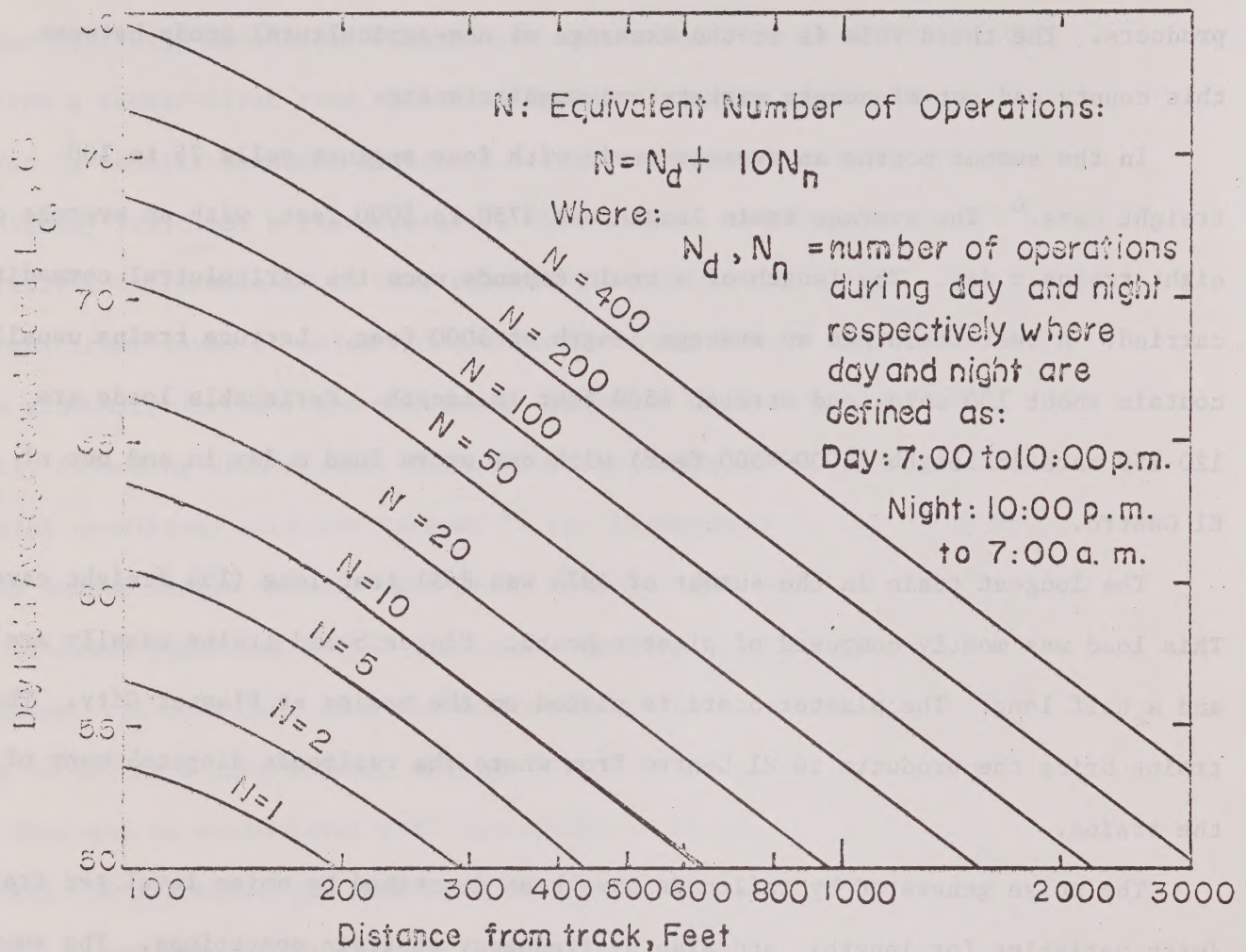


Figure 13 Distances to Day Night Average Level (L_{dn})
Noise Contours for Railroad Line Operations

Source: Materials distributed at SCAG Workshop on the Noise Element.

COUNTY ROADS

The roads in the irrigated area which bear agricultural, residential and commuter traffic on a daily basis, with the main loads occurring on a Monday-Friday cycle. This contrasts with roads in the Winterhaven-Bard area. In that section of the county, the heaviest road use occurs on weekends, in conjunction with recreationists attracted to the Colorado River.

In the case of both the southeast corner and central irrigated area, the use of county roads is connected to important economic activities. The home to field movement of agricultural workers and the transportation of farm commodities is an essential function of agricultural activity. The bulk of the traffic on county roads is agriculturally oriented. Since the primary guideline given to the County Planning Agency by the Board of Supervisors has been the preservation and protection of agricultural land uses, county roads should have a privileged status commensurate with their economic importance.

The state has proposed a change in the Administrative Code that would cause new residential buildings, located within the 60 dB contour of a select system of county roads, to have sound proofing that would reduce the noise level of an interior room to 45 dB(A). This proposed rule would place the burden of compatibility on new residential uses, which intrude into areas of agriculturally oriented activity.

WATER VEHICLES

The State of Arizona, which borders Imperial County on the east, has legislated noise standards for her waterways. The official standard is a noise level of 86 dB(A). This standard will be compared to the noise generated by boats at least fifty feet

away from the point of measurement.

As a "breaking-in" gesture to aid the public's reception of new sound regulations, Arizona is conducting sound tests for any boat owner who wishes to know the noise level generated by his craft. This complimentary sound testing program began on April 1, 1974, and served as a training exercise for the Fish and Game personnel. These personnel presently are receiving formal instruction in noise measurement techniques. This formal training is required for personnel who have had previous experience in sound measurement. The goal is to have all (noise) enforcement personnel receive the status of certified sound technicians. In this manner noise enforcement and reduction will be more effective, since the wardens issuing citations will be able to qualify as expert witnesses in court. Arizona will not begin the enforcement of their noise standards until April or May of 1975. Prior to that time several necessary steps must be taken, including the testing of retro-fit muffler devices.

It would be in the interests of Imperial County if the state would pass a noise statute compatible with the Arizona law. Present California law only applies to boats manufactured after January 1, 1974. The noisy duration of an implicit "grandfather clause" would have an adverse impact upon Imperial County's environment.

OTHER NOISE EMITTERS

The other noise emitters which cause concern are motorcycles, off-road vehicles and industrial uses. The nature of their sound levels, the noise characteristics, and land use compatibility can be mostly handled by those offices presently delegated the tasks.

The motorcycles and other motor vehicles are regulated by the California Highway Patrol, and with sufficient training, by the County Sheriff's Deputies. Off-road vehicles on federal lands are the responsibility of the Navy security guards or the Desert Rangers of the Bureau of Land Management.

Industrial noise is the responsibility of the California Occupational Health and Safety inspectors. Industrial noise intruding off-site responsibility which could be handled by the Environmental Quality Control group of the Health Department. Segregation of uses which are incompatible due to noise qualities is the responsibility of the Planning Agency.

POLICIES

PHILOSOPHY

The Noise Element of the General Plan will have an adoptive, preventative philosophy. This is because various policy considerations have already been made in the County, and various decisions have been pre-empted by the state and federal governments.

Federal Pre-emptions include:

1. Airports. Airports are controlled by the FAA in matters involving flights off of the ground.
2. Railroads. Railroads are regulated by the Interstate Commerce Commission

State Pre-emptions include:

1. Airports. Ground operations of general aviation facilities are licensed by the State Aeronautics Department.
2. State-Maintained Highways. The California Highway Patrol regulates noise coming from mechanical and speed causes on the state highways, U.S. highways, and Interstate freeways. The CHP Noise unit is currently fulfilling the functions of a State Office of Noise Control.

County Pre-emptions

The Board of Supervisors has set basic policy considerations to guide the planning function in this County. The prime guideline for planning activities is the preservation and protection of agricultural land. This policy decision manifests itself several ways in regards to the Noise Element.

1. Airports. The airports within the County, particularly Imperial

County Airport, are major factors in the marketing and expediting of agricultural products produced in the area. This causes the airports to assume a priority status.

2. County Roads. The traffic load on County Roads is produced by either residential or agricultural uses. The channelization and regulation of residentially-oriented traffic in a rural setting has marginal possibilities, and is of minimal practicality. The heavy truck traffic on various County roads is a seasonal phenomenon connected with the harvesting of various crops. These agricultural activities and accessory uses should not be hampered or impaired by the County land-use planning policy.

County Noise Policy

In view of the above, County Noise Policy must contain an essentially accomodating position in regards to the present air facilities and county roads. The proposed policy will have a channelizing function, similar to the role of wooden forms and steel reinforcement-bar in shaping the functional effect of structural concrete.

Noise-emitting uses that presently exist, and are incompatible with noise-sensitive uses from which they are presently isolated, should be protected from the encroachment. This is identical to the right of protection which residential uses have traditionally enjoyed. Imperial County recognizes the merits of this segregation concept, and holds that major dwelling groups (townsites, subdivisions, etc.) should not be forced to suffer from a new, unwanted neighbor polluting the environment.

An established enclave of noise-emitting activities should be protected from encroachment by noise-sensitive uses which may be incompatible. Noise-emitting uses will be encouraged and/or required to locate in those locations that are zoned (industrial or a floating over-lay zone) to tolerate high ambient noise levels. Uses which would not be adverse to agricultural activities might locate

in the center of an agricultural area if other considerations were approved by the County Planning Commission.

Although the status quo should be preserved, every effort will be made to segregate incompatible activities. All requests for zoning will be examined to determine whether they are noise-sensitive or noise-emitting. The proposed locations of noise-emitting uses will be examined to determine proximity to parks, hospitals, convalescent homes, and other uses hypersensitive to noise. This philosophy is consistent with the County zoning ordinance.

GENERAL POLICIES

Noise is a major source of environmental pollution which represents a threat to the serenity and quality of life in population centers and rural areas. Noise exposure may be a cause of adverse physiological or psychological effects as well as economic losses. Accordingly, it is County policy a) to call attention to this threat, b) to encourage the control of noise at its source in cooperation with other State and local departments and agencies, c) to encourage land utilization patterns for housing and other needs that will separate uncontrollable noise sources from residential and other noise-sensitive areas, d) and to prohibit support to future construction of noise sensitive uses on sites having unacceptable noise exposures.

The County should require that noise exposures and sources of noise be given adequate pre-submittal consideration as an integral part of urban and rural environments, in connection with all applications that must be processed. This consideration shall assure that new housing and other noise-sensitive accommodations and uses will not be planned for areas whose current, or projected, noise exposures exceed the standards contained in this element. Particular emphasis is placed on the importance of compatible land use planning in relation to airports, railroads, highway transportation, and other major sources of noise. The County supports the use of planning funds on the State level to explore ways of reducing environmental noise to acceptable exposures by use of methods having a cost-benefit ratio which is realistic and appropriate. Reconnaissance studies, and, when

justifiable, in-depth studies of noise control and abatement will be considered in environmental impact reports.

New dwelling units on sites which have, or are projected to have, unacceptable noise exposures should be discouraged. This should apply to college housing, group practice facilities, non-profit hospitals and nursing homes. The County should set minimal environmental standards consistent with state and federal guidelines to avoid the wastage of public and private investments in housing. It is the policy of Imperial County to encourage housing investments to locate and build so that the utmost efficiency and housing stock can maximally benefit the residents of this county.

The County should encourage modernization efforts for buildings in noisy environments when such efforts improve the noise exposure environments without substantially increasing the life of the structure. When modernization or rehabilitation would substantially increase the life expectancy of the structures, it will also be County policy to apply noise exposure standards similar to those applicable to new construction.

The County staff should seek all possible assistance provided to local governments by the State of California or the Federal Government, for the alleviation of community noise. Each formal application will require approval of the Board of Supervisors.

The Staff should make contact with any public agency having a continuing research and development program designed to: provide new knowledge of noise prevention and controls to public and private bodies; to develop improved methods for anticipating the encroachment of higher noise exposures; and to deal with this encroachment and to foster better understanding of the consequences of noise. Dissemination will be made through appropriate channels.

It shall be the County's general policy to promulgate minimum standards and guidelines with respect to noise prevention, absorption and control; and to utilize such standards and guidelines as a uniform policy to guide County program decisions; and to support noise policies and standards of State and local governments that are realistic and appropriate.

Noise exposures shall be divided into four general groupings in accordance with this plan:

- a. Critical
- b. Concern (normally unacceptable intermediate exposure)
- c. Caution (normally acceptable intermediate exposure)
- d. Acceptable

Exceptions to the recommended policy are strongly discouraged. Applications for all sites having unacceptable noise exposures should be accompanied by an Environmental Impact Report.

Decisions with respect to proposed housing sites with clearly acceptable noise exposures should include statements to that effect in the Environmental Impact Report.

All County departments and divisions should maintain surveillance on possible noise problem areas, and advise local officials, and all interested individuals of the acceptability or unacceptability of selected sites for noise reasons, at the earliest possible date in the decision-making process.

In order to assure adherence to the guidelines and standards, it is the responsibility of the decision making agency to secure the assessment, measurement, and projections of sound exposures at the site of a proposed project.

General Standards

A Series of Standards incorporating both technical and policy considerations shall be established to determine the impact of noise.

New Residential Construction (Exterior)

Critical

80 Decibels or more 60 min/24 hrs

75 Decibels or more 8 hrs/24 hrs

Concern

65 Decibels 8 hrs/24 hrs

Loud Repetitive Noises

Caution

Less than 65 Decibels 8 hrs/24 hrs

Allowable

Less than 45 Decibels 30 min/24 hrs

Interior Noise Exposures

Sleeping Quarters

Allowable

--do not exceed 55 dB(A) for more than an accumulation of 60 minutes in any 24 hour period, and

--do not exceed 45 dB(A) for more than 30 minutes during night time sleeping hours from 11 p.m. to 7 a.m., and

--do not exceed 45 dB(A) for more than an accumulation of eight hours in any 24 hour day.

Party Wall Insulation

Party walls between multi-family structures shall have a sound transmission class of more than 45.

Other Uses

Until such time as other standards are adopted, County personnel shall take the effect of noise into consideration when developing policies and guidelines, and when reviewing specific projects. Wherever feasible, standards along the above lines shall be employed in a manner consistent with proposed uses, densities, and construction types.

Philosophy in Application of Standards

County personnel should be guided by a desire to prevent noise problems from coming into being, and by an overall philosophy of encouraging the control of noise at its source. Particular attention should be paid to the fostering of land utilization patterns for housing and other "municipal" needs that will separate uncontrollable noise sources from residential and other noise-sensitive areas.

Interdepartmental Coordination

Administrators shall foster appropriate coordination with other departments and agencies having responsibility in this area. These offices include Caltrans for state highways and freeways, the Department of Aviation for airports, and any other appropriate state or regional agency. The Commander of the El Centro Naval Air Facility is to be consulted at appropriate times on matters of mutual interest. The County offices which generally are involved include Planning, Building Inspections, Public Works, and Building and Grounds. The noise factor will be a consideration in the capital improvements programming and budgeting process of Imperial County.

AIRPORT

There is little dispute among planners and others associated with land use policy that land use controls for areas adjacent to airports are necessary. Serious negative impacts can result where such controls are absent and incompatible development proceeds in a random fashion. For example, twenty-two people were killed when a jet crashed into a Sacramento ice cream parlor.

Aside from crash potentials, aircraft generate considerable noise. Several military installations have ceased flying operations or closed entirely because of concerted action by those who purchased homes too close to the bases. Similarly, Los Angeles International, thoroughly encroached upon over the years, has some four billion dollars in lawsuits now pending in the courts.⁷

Both the Naval Air Facility and the Imperial County Airport have felt the effects of development. Experience has shown that when unguided development impinges upon a facility's potential-aircraft-disaster-area, and/or high noise zones, the impacted groups soon seek relief. This can range from the imposition of "quiet hours", to the complete closure of a facility. Conversely, it must be recognized that the public must be protected from the noise and danger inherent in air field operations. Therefore, it is in the best public interest to protect the taxpayer's multi-million dollar investment in its civil and military installations, and to afford these same citizens a plan for the rational development of lands impacted by aircraft operations. This plan element should be fully attentive to the needs of the county's citizens. This is particularly true when these airports aid the County's economy by adding jobs; and in the case of the County Airport, by expediting demand for Imperial County products. The County does have an obligation to its inhabitants to protect both the people adjacent to, and the public's investment in, the various air installations within Imperial County.

⁷ On July 3, 1974, one of these suits, Aaron v. City of Los Angeles was decided in the State Court of Appeals.

Land Use Policies

The basis of an effective control system should be a set of development policies. These policies should serve as the standard by which all airport land use planning and zoning actions are evaluated. The following policies should be part of the Imperial County General Plan.

- (1) Guide and regulate future growth and development around airports by preparing ordinances and overlay zones to prevent incompatible usages.
- (2) Adopt standards applicable to those uses constructed near airports.
- (3) Maintain restrictions on uses that would prevent or adversely effect air operations.
- (4) Limit usages and flight paths.
- (5) Consider mental and physical health hazards attributed to noise.

Noise Contours

The noise contours were developed from several studies. The Naval Air Facility's noise emmissions were measured by Bolt, Beranek, and Newman, who developed the HUD guidelines and the NEF land use compatibility table, found in the Master Plan of Imperial County Airport. Most CNR vicinity maps are made using predrawn contours, which group aircraft together by using average profiles. The N. A. F. contours were drawn using the more detailed procedures in order to accurately produce a set of contours that closely match the actual flight profiles.

STATE HIGHWAYS

The state highways and freeways are activities essential to the creation, sale and transportation of Imperial County's agricultural and industrial products.

The county should support reasonable and appropriate legislation on the state level for selected reductions in traffic noise. The county also supports the development of State Highway 86 as an expressway with the appropriate design and right-of-way widths. It is in the interests of Imperial County that this be built in the immediate future.

It is county policy that appropriate setbacks and sound-proofing (to 45 dB(A) interior noise levels) occur in residential developments allowed to be built in proximity to state highways.

RAILROADS

Due to the functions and services rendered to this county's economy, it is in the interest of Imperial County to not interfere with the railroads serving it. Appropriate land use strategies, including segregation where appropriate, will diminish the future effects of railroad noise emissions.

COUNTY ROADS

County roads are an important segment of the capital investments supporting Imperial County's present economy. It is deemed that normal, legal usage of these roads by vehicles conforming to noise standards contained in the California Motor Vehicle Code (and enforced by appropriate law enforcement agencies) be pre-emptorily exempted from noise emission and abatement programs. Sound-proofing, buffering, and where necessary land-use segregation, are the main exceptions to this policy.

WATER VEHICLES

It is the policy of Imperial County to encourage the State of California to adopt water vehicle noise emission standards identical to those of Arizona, which state shares the Colorado River boundary with us.

The lower level of noise emissions allowed could be implemented without detriment to the boating industry, by the use of "do-it-yourself" muffler kits. The noise levels will be diminished at a much lower rate if the current California standards are maintained. These only affect new vehicles and power sources manufactured after January 1, 1974. For the immediate and near future the effect of current laws will be of minimal importance.

OTHER NOISE EMITTERS

Imperial County, and its departments, divisions and offices will cooperate with appropriate governmental agencies, at all levels, in order to produce a local environment less polluted by excessive noise.

Foremost among the expected cooperative tasks will be the role of the planning staff in exchanging information, ideas and data with appropriate planning agencies, and the State Office of Noise Control, when it is staffed and funded.

The second priority will be for the Environmental Quality Control group of the Health Department to exercise its state-authorized powers in the area of noise control. The appropriate department head is authorized to seek funding for good quality, but reasonably priced equipment, so that his trained staff may be more fully utilized by the county. In this way maximum efficiency and environmental benefits may be obtained for residents at minimal expense.

IMPLEMENTATION

GENERAL

The appointed and elected department heads of Imperial County are expected to engage in improving the quality of life in Imperial County, as is appropriate and consistent with their spheres of concern and responsibility. When there is a question on policy or appropriations needed to implement policies already approved, the department head involved should suggest a specific action to the Board.

Cooperation produces the most beneficial results. Initiative in seeking the public good is to be desired of all county staff. Joint working relationships are to be encouraged. Implementation of beneficial public policy goals should be accomplished with initiative, cooperation, and minimal "red-tape" on the part of all concerned. This strategy will be appropriate for, and apply to, implementation of the County Noise Element.

AIRPORT

The first state of implementing the noise element, as it applies to airports, is to utilize the accompanying Airport Noise Map in deciding questions of appropriate land use. Most particularly, new hospitals, rest homes, and convalescent centers (for medical and mental recuperation) should be prohibited from being located within the Caution area (45 dB(A) contour).

Schools should be discouraged from locating inside the Caution area. In the area of Concern they should be prohibited, unless the Planning Commission grants a use permit that is conditioned upon adequate sound proofing and similar protective requirements. In no case should schools be allowed to be built above ground in the Critical area.

The second stage will be to revitalize the Imperial County Airport Zoning Commission. This commission's first task should be to revise the Airport Zoning

Ordinance by way of review, revision or the writing of a completely new ordinance. The segregation of airports and incompatible uses should be performed by the planning staff, the Planning Commission, and the Airport Zoning Commission. Consultation will be frequent and appropriate with the Councils, Planning Commission, and staffs of cities within Imperial County. The Commander of the El Centro Naval Air Facility is to be consulted frequently as appropriate. The managers and owners of the airports within the Imperial County will likewise be consulted, and their advice will be sought on pertinent matters.

Cooperation and consultation will be the guides in regards to implementing the County's noise/land-use policy.

STATE HIGHWAYS

The noise levels on state highways are exempt from county control. In addition, Imperial County's dependence on the role that these roads play in her economy minimizes a practical concern with restraining present noise levels, other than tightening statewide noise emission standards for motor vehicles. State and local enforcement of these statutes would diminish much of the legitimate concern over this problem. The Zoning Ordinances and Maps should be amended as necessary to provide the distances and setbacks necessary to attenuate the sound.

RAILROADS

Segregation of railroads, and intrusions of noise-sensitive land-uses will minimize problems of compatibility in the future.

COUNTY ROADS

The County should require all new residential construction adjacent or in proximity to county roads that generate noise levels of 60 dB(A) or higher, to include sufficient sound-proofing allowing interior noise levels of 45 dB(A). Local law enforcement agencies should be encouraged to have

trained men to enforce the Motor Vehicle Code's noise standards on roads in Imperial County.

WATER VEHICLES

The County should encourage lower noise limits (in dB(A)) for motorboats and other water vehicles. The County should cooperate with the State of Arizona (along the Colorado River) and Riverside County (Colorado River and Salton Sea) in enforcing noise standards among water vehicles. The Ranger staff of the Parks and Recreation Department should enforce water vehicle noise standards in Imperial County.

OTHER NOISE EMISSION SOURCES

The appropriate agencies will be encouraged or directed to implement the stated policy pertaining to their sphere of responsibility as mentioned above.

SUMMARY OF LAND-USE IMPLEMENTATION STRATEGY

Land use zoning will be the primary tool for implementation. Noise maps for various transportation modes will be utilized to determine the general character and situation of the site. Areas having questionable noise levels should require a longer study period for the staff to assess on-site ambient and intrusive noise levels.

Data for all questionable projects should be gathered either from available records and/or in the field. This data will be reported on a summary sheet containing the essential information, and a classification of the noise exposure class (Critical, Concern, etc.).

If a proposed project is to be located on a site known to have excessive, but not prohibitive noise levels, approval might be granted subject to various conditions.

For rezonings, general plan changes, subdivision recordings, and other appropriate actions, the Planning Director should include the noise summary sheet with the staff recommendations sent to the Planning Commission.

BIBLIOGRAPHY

Arnold Thompson Associates and August W. Compton & Associates,
1974 Environmental Impact Statement for Imperial County Airport Master Plan

Arnold Thompson Associates and August W. Compton & Associates,
1974 Master Plan, Imperial County Airport, California

Bolt, Beranek and Newman
1971 Noise Assessment Guidelines
Washington: U. S. Department of Housing and Urban Development

Bolt, Beranek and Newman
1970 Noise from Aircraft Operations, Naval Air Facility, El Centro, California

Boyle, Ed
1974 Procedural Outline: Noise Level Prediction Methodology to Supplement Sound Contour Maps for Riverside and Imperial Counties within District 11
San Diego: Caltrans Multimodal Transportation Planning Section.

Los Angeles County Road Department,
1974 Tentative Noise Element
Los Angeles: L.A. County Road Department

Peterson, Arnold P.G. and Ervin E. Gross, Jr.
1967 Handbook of Noise Measurement (Sixth Edition)
West Concord, Mass: General Radio Company

Southern California Association of Governments
1974 "Background Information for the Workshop on The Noise Element."

State of Arizona, Department of Transportation
1973 Environmental Impact Statement for Interstate and Defense Highway 10.

State of California, Council on Intergovernmental Relations
1973 General Plan Guidelines
Sacramento: Office of Planning and Research

State of California, Legislature
1973 Administrative Code, Section 28

State of California, Legislature
1972 Government Code, Section 65302 (g)

U. S. Council on Environmental Quality
1970 First Annual Report

U. S. Department of Housing and Urban Development
1971, "Transmittal Notice 1390.2"

U. S. Environmental Protection Agency
1974 Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety
Washington, D. C: U. S. Government Printing Office.

U. S. Navy,
1973 Aircraft Noise Compatible Land Use Study, Naval Air Facility,
El Centro, California
North Island, California: Environmental Protection Data Base, Aircraft
Environmental Support Office, Naval/Air Rework Facility.

U. S. Supreme Court
1927 Village of Euclid V. Ambler 272 US 303

U. S. Supreme Court
1974 Village of Belle Terre V. Boraas Case No. 73-191,
--US--.

COUNTY ROADS

LEGEND

COUNTY PARKS

SCHOOLS

HOSPITALS

INTERSTATE HWYS

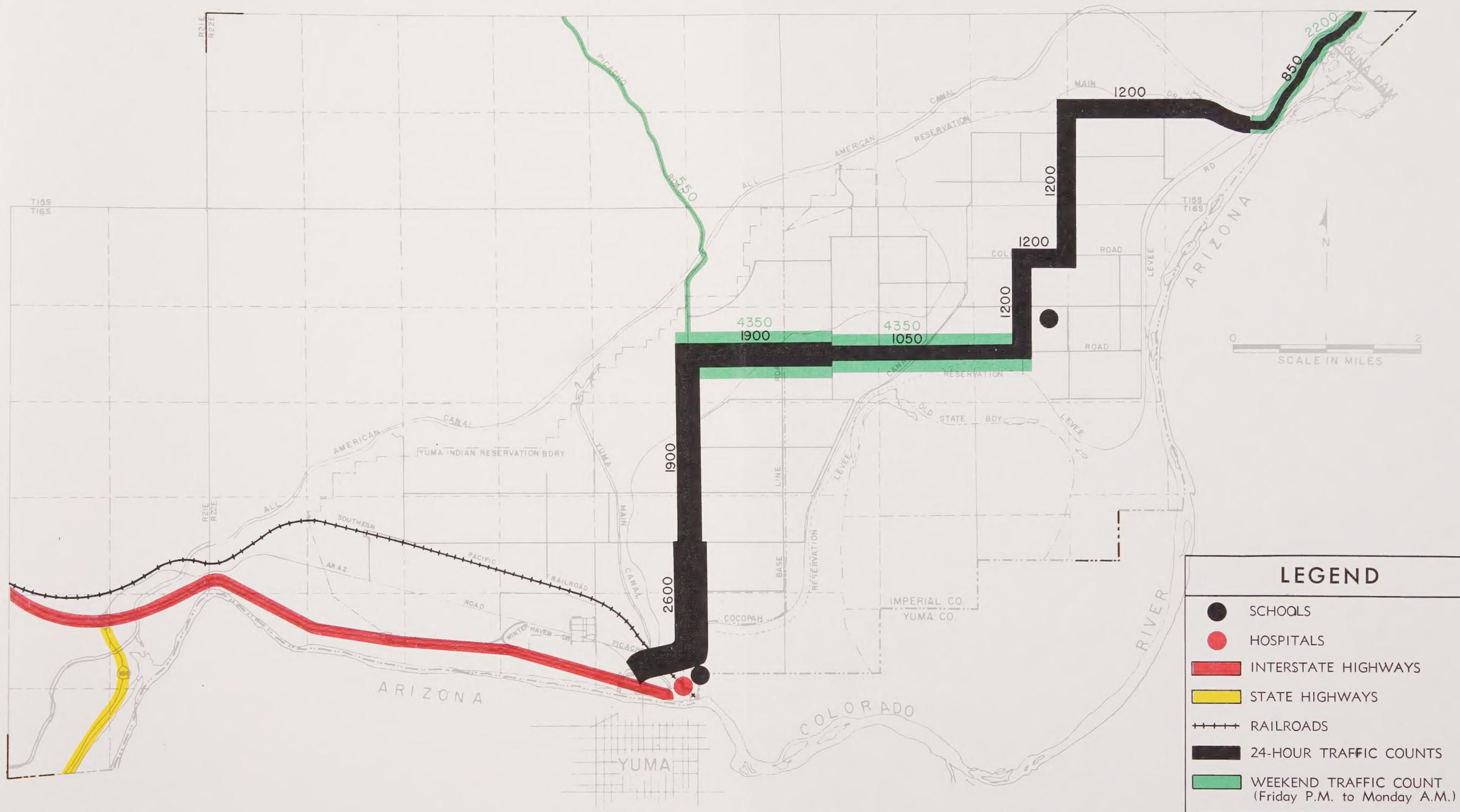
STATE HWYS

RAILROADS

24 HOUR TRAFFIC COUNTS



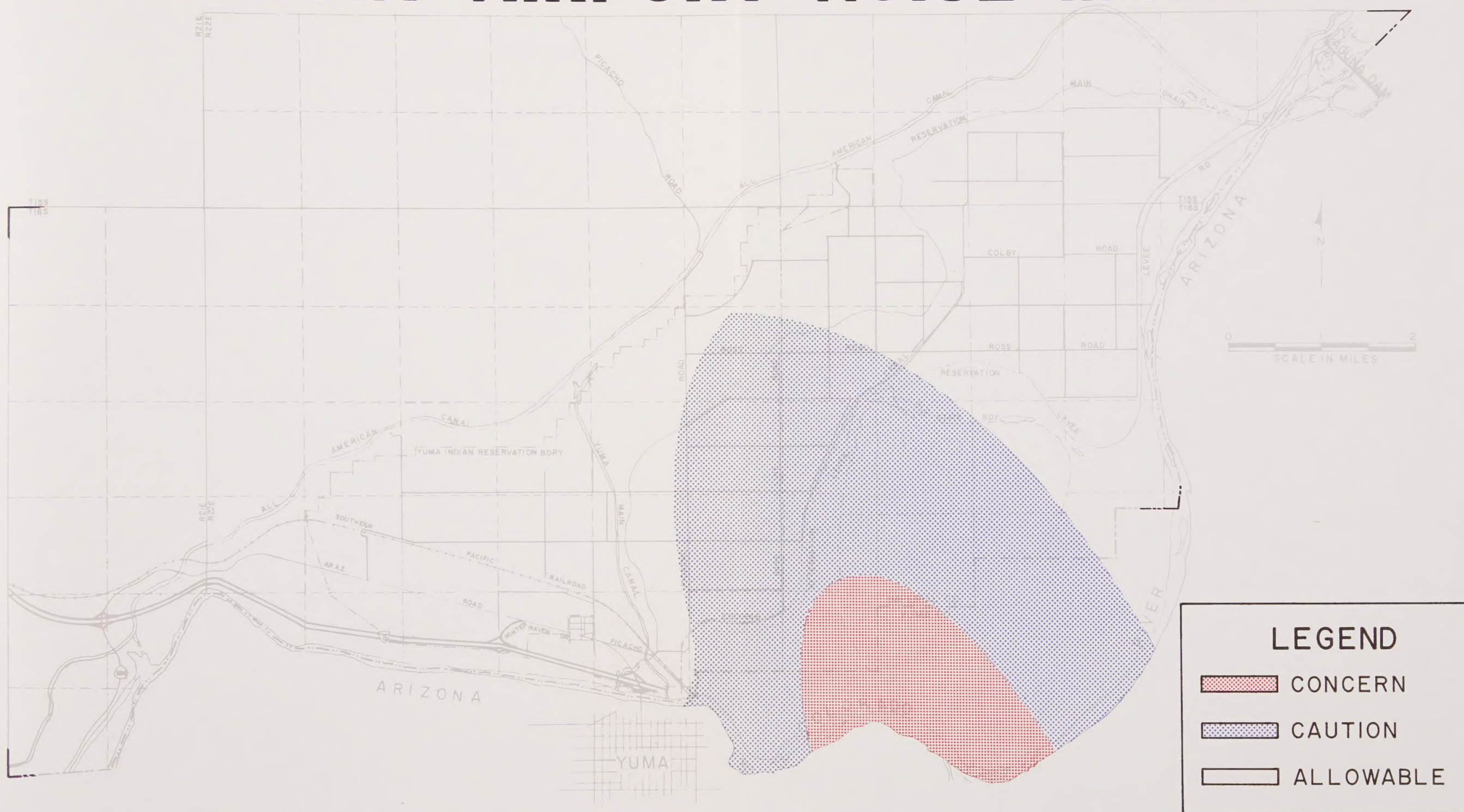
COUNTY ROADS



LEGEND

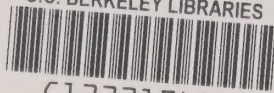
- SCHOOLS
- HOSPITALS
- INTERSTATE HIGHWAYS
- STATE HIGHWAYS
- RAILROADS
- 24-HOUR TRAFFIC COUNTS
- WEEKEND TRAFFIC COUNT (Friday P.M. to Monday A.M.)

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